WHAT IS CLAIMED IS:

1. An alloy, the chemical composition of which comprises, by weight:

$35\% \leq Ni \leq 37\%$

$0.001\% \leq C \leq 0.05\%$

$Mn \leq 0.10\%$

$Si \leq 0.15\%$

$Co \leq 0.5\%$

$S < 0.002\%$

$P < 0.006\%$

$B \leq 0.0005\%$

$Al+Mo+Cu+Cr \leq 0.15\%$

$0.015\% \leq 2(V+Ti)+Nb+Zr+Ta+Hf \leq 0.2\%$

$0.0025\% \leq N+O \leq 0.015\%$

possibly calcium and/or magnesium in a total content of between 0.0001 and 0.005%,
the remainder consisting of iron and inevitable impurities resulting from the production process.

2. The alloy as claimed in claim 1, which furthermore has a niobium content of below 0.1%.

3. The alloy as claimed in claim 1 or 2, which furthermore has a carbon content of above 0.0035%.

4. The alloy as claimed in any one of claims 1 to 3, and the grain size of which is below 10 (in accordance with G ASTM E112).

5. The alloy as claimed in any one of claims 1 to 4, and which exhibits a coefficient of thermal expansion between 20°C and 100°C of below $0.7 \times 10^{-6}/K$.

6. The alloy as claimed in any one of claims 1 to 5, and of which the conventional elastic limit at 0.2% OYS in the annealed state is above 280 MPa.

7. The alloy as claimed in claim 6, and of which the

conventional elastic limit at 0.2% OYS in the annealed state is furthermore above 300 MPa.

8. The alloy as claimed in any one of claims 1 to 7, wherein the niobium and carbon contents are furthermore such that:

$$Nb \times C \leq 0.01.$$

9. The alloy as claimed in any one of claims 1 to 8, wherein the titanium, niobium and nitrogen contents of the alloy composition are furthermore such that:

$$Ti \times N \leq 0.00006$$

$$Nb \times N \leq 0.001.$$

10. The alloy as claimed in any one of claims 1 to 9, and which contains precipitates based on titanium and/or on niobium and/or on vanadium and/or on tantalum and/or on zirconium and/or on hafnium, the mean size of which is equal to 100 nm or smaller.

11. A method of manufacturing a strip of alloy as claimed in any one of claims 1 to 10, comprising the steps whereby:

- a semi-finished version of said alloy is hot-rolled after reheating to a temperature of above 850°C and below 1350°C so that the rolling temperature is above the solutionizing temperature of the titanium- and/or niobium- and/or vanadium- and/or zirconium- and/or tantalum- and/or hafnium-based precipitates and so that the temperature at the end of rolling is below the temperature at which said precipitates begin to precipitate, so as to obtain a hot-rolled strip,

- the hot-rolled strip is cold-rolled in one or more passes to obtain a cold-rolled strip, possibly with one or more intermediate annealing operations between two passes.

12. The method as claimed in claim 11, wherein the temperature of the intermediate annealing operation or operations performed during the cold-rolling is below the solutionizing temperature of said precipitates.

13. The method as claimed in claim 11, wherein the temperature of the intermediate annealing operation or operations performed during the cold-rolling is above the solutionizing temperature of said precipitates.

14. The method as claimed in claim 11 or 12, wherein the temperature at the end of hot-rolling is equal to 850°C or lower.

15. The use of an alloy as claimed in any one of claims 1 to 10 for the manufacture of shadow masks for color display cathode ray tubes.

16. The use of an alloy as claimed in any one of claims 1 to 10 for the manufacture of cryogenic storage containers.

17. The use of an alloy as claimed in any one of claims 1 to 10 for the manufacture of electron gun grids.

18. The use of an alloy as claimed in any one of claims 1 to 10 for the manufacture of shadow masks held in the vertical or horizontal direction for flat screen monitors.

19. The use of an alloy as claimed in any one of claims 1 to 10 for the manufacture of shadow mask support frames.